

## **REMARKS**

In response to the Office Action mailed August 18, 2010, Applicants respectfully request the Examiner to reconsider the above-captioned Application in view of the foregoing amendments and the following remarks. By this paper, Applicants will have added new Claims 18-19. Accordingly, Claims 1-2, 4-5, 7-10, 12, and 14-19 are currently pending in the present Application.

### **Prior Art Rejections**

In the Office Action, Claims 1-2, 4-5, 7-10, 12, and 14-17 were rejected as being unpatentable over Stevens in view of Hansson. Claim 3 is rejected over Stevens in view of Hansson and further in view of Cottrell (2004/0142304) Applicants respectfully traverse the rejection of Claims 1 and 15 and request that the present rejection of Claims 1 and 15, as well as the rejection of Claims 2-5, 7-10, 12, 14, and 16-17 be withdrawn and that these claims be indicated as allowable.

Stevens teaches an implant with an annular groove. Stevens discloses a one piece implant adapted to be placed in bone and all the way through the soft tissue on the jawbone. Furthermore, Stevens includes at least one stabilizing pin adapted to run through a passage in said implant wherein said passage forms an opening from the oral cavity and to the bone region when the implant is mounted in the jawbone. Stevens disclosure was published in 1971 and aims at increasing stability by means of said pins. Even before this date it was quite common to have an indent or annular groove-kind shape of the size disclosed in Stevens at the location that corresponds to an interface between an implant and an abutment of a two-piece solution. Since a one piece implant can be held to include a spacer/abutment and an implant the location of the annular groove in Stevens is in accordance with well-established techniques. *See* Stevens, col. 4, lines 60-72. The annular groove is configured such that “when the screw means 20 is in its final position, the junction 14 between the soft tissue 16 and the **crest** of the cortical bone region 12 is located precisely at the groove 58.” *Id.* at col. 4, lines 61-66. The Office Action recognizes that Stevens does not teach the dimensions recited in Claims 1 and 15. *See* Office Action, page 3. Nevertheless, the Office Acton argues that, “Hansson et al. disclose (sic) a dental implant having micro threads or grooves at the upper portion of the implant” (emphasis added). The Office

Action further states that “it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Stevens by making the annular groove 58 with a depth and width within the respective range taught by Hansson in order to optimize osseointegration of the implant to the bone tissue.” Applicants respectfully disagree.

As will be explained below, the proposed combination is improper and would not be made by a person of skill in the art because there are fundamental and critical differences in the purposes of the groove in Stevens versus the threads and grooves in Hansson. First and foremost the purpose of the present claimed invention is to avoid bone absorption at the upper areas of the implant near its attachment components as described in more detail in the background of the invention. Bone absorption means that said bacteria and organisms tending to cause inflammation can penetrate down to the lower parts of the implant. These disadvantages may in some cases lead to the implant having to be refitted. The object of the present invention is to solve this problem. Now, Stevens includes at least one stabilizing pin adapted to run through a passage in said implant wherein said passage forms an opening from the oral cavity and to the bone region when the implant is mounted in the jawbone. Thus, Stevens is silent about creating barriers against bacteria and actually suggests at least one channel connecting the oral cavity with the bone region. Not only the combination with Hansson but any document combined with Stevens would hence be improper because such a combination would undermine the very purpose of the present invention. As such, a person of skill would not combine the references as suggested.

A person of skill has no reason whatsoever to modify the groove in Stevens by making it microscopic like the threads in Hansson because Stevens teaches away from such a modification. Stevens clearly indicates the purpose of the groove: to “provide the implant with a contour that will minimize the stress on crest of the cortical bone region 12.” Stevens, col. 4, lines 65-66 (emphasis added). As shown in Figure 2 of Stevens at right, the groove 58 in Stevens extends as an annular ring around the circumference of the implant and is sized to receive ingrowth of the cortical bone region 12 and the soft gum tissue 16. *Id.* at lines 64-66. Upon reviewing Figure 2, the groove 58 appears to extend along nearly one-fourth of the longitudinal length of the upper portion of the implant. With the groove 58, Stevens gives the implant a contour, which significantly reduces the diameter of the implant. Further, because the groove 58 is large enough

to receive bone 12 and soft tissue 16 ingrowth, Stevens is able to minimize the stress on the crest of the cortical bone region 12. Accordingly, a person of skill would consider it desirable to have a groove 58 that is sized large enough to receive a substantial amount of bone and soft tissue ingrowth. A small feature, such as the thread in Hansson, simply cannot achieve this amount of ingrowth or provide the ability to place the thread at the junction of bone and soft tissue or a contour that will minimize the stress on crest of the cortical bone region. Therefore, a person of skill would not have any reason to make the groove 58 smaller when the plain teachings of Stevens are to provide a large groove, which teaches away from such a modification.

Accordingly, the proposed combination (making the groove 58 in Stevens microscopic) would also undermine the purpose of the groove 58 in Stevens. For example, the proposed combination would make it more difficult to position the groove at a junction of the bone and soft tissue in order to enable bone and soft tissue growth into the groove. Additionally, the proposed combination would also undermine the purpose of Stevens by decreasing the size of the groove. As noted, Stevens indicates that the purpose of the groove is to minimize the stress on crest of the cortical bone region. This purpose is achieved at least partially because the implant has a reduced local diameter at the groove, which allows bone ingrowth and stress dissipation. Although Stevens does not discuss depth or width ranges of the groove, Figure 2 shows that the groove represents a considerable proportion of the upper portion of the implant. Reducing the size of the groove is contrary to the disclosure and apparent teachings of Stevens to provide a large groove that provides a significant reduction in the diameter of the implant, as shown in Figure 2. Reducing the size of the groove 58 such that the groove would have a depth of between about 50 - 100  $\mu\text{m}$  and a width of between about 70 - 160  $\mu\text{m}$  would be contrary to the goal of reducing stress concentrations.

Therefore, in view of the above-mentioned important differences between threads and grooves, because Stevens teaches away from the proposed combination, and because the proposed combination would undermine the purpose of Stevens, it would not be obvious to a person skilled in the art to apply dimension of threads in Hansson to the groove of Stevens.

In contrast, Claim 1 recites, *inter alia*, an implant having “at least one groove which extends all around an outer surface of the upper portion to form a closed loop . . . having a depth of between about 50 - 100  $\mu\text{m}$  and having a width of between about 70 - 160  $\mu\text{m}$ .”

Further, Claim 15 recites, *inter alia*, a method of placing an implant comprising placing an implant having “at least one groove which extends in a closed track around a periphery of the implant . . . having a depth of between about 50 - 100  $\mu\text{m}$  and having a width of between about 70 - 160  $\mu\text{m}$ .”

Implants and methods within the scope of Claims 1 and 15 provide unique advantages and benefits that are not shown in the cited references. For example, as described in the specification of the present application, the groove extending in “a closed track” enables bone ingrowth into the groove to provide a complete, uniform barrier against penetration of bacteria or organisms. The spiraling thread of the prior art does not provide a sufficient barrier because bacteria and organisms can simply follow the helical path of the thread and penetrate into the bone. The unique synergistic benefits provided by the groove extending in a closed track and having a cup-shaped cross section, as recited in Claims 1 and 15, provide a surprising and effective solution to the challenges of implant instability and bacteria ingrowth in a manner that is not taught or otherwise suggested in the prior art or obvious to one of skill in the art.

Therefore, Applicants respectfully submit that Claims 1 and 15 are allowable over the art of record and respectfully request that the Examiner withdraw the rejection of these claims, as well as that of Claims 2-5, 7-10, 12, 14, and 16-17.

#### **New Claims**

Applicant has added new Claims 18-19. Claims 18-19 depend upon Claim 15 and for at least this reason are in condition for allowance. No new matter has been added through these claims.

#### **No Disclaimers or Disavowals**

Although the present communication may include alterations to the Application or claims, or characterizations of claim scope or referenced art, Applicants are not conceding in this Application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this Application. Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure,

**Application No.:** 10/582,919  
**Filing Date:** April 12, 2007

including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicants have made any disclaimers or disavowals of any subject matter supported by the present Application.

### **CONCLUSION**

Applicants respectfully submit that the above rejections and objections have been overcome and that the present Application is now in condition for allowance. Therefore, Applicants respectfully request that the Examiner indicate that Claims 1-2, 4-5, 7-10, 12, and 14-19 are now acceptable and allowed. Accordingly, early issuance of a Notice of Allowance is most earnestly solicited.

Applicants respectfully submit that the claims are in condition for allowance in view of the above remarks. Any remarks in support of patentability of one claim, however, should not be imputed to any other claim, even if similar terminology is used. Additionally, any remarks referring to only a portion of a claim should not be understood to base patentability on that portion; rather, patentability must rest on each claim taken as a whole. Applicants respectfully traverse each of the Examiner's rejections and each of the Examiner's assertions regarding what the prior art shows or teaches, even if not expressly discussed herein. Although amendments have been made, no acquiescence or estoppel is or should be implied thereby. Rather, the amendments are made only to expedite prosecution of the present Application, and without prejudice to presentation or assertion, in the future, of claims on the subject matter affected thereby. Applicants also have not presented arguments concerning whether the applied references can be properly combined in view of, among other things, the clearly missing elements noted above, and Applicants reserve the right to later contest whether a proper reason exists to combine these references and to submit indicia of non-obviousness.

The undersigned has made a good faith effort to respond to all of the rejections in the case and to place the claim and drawings in condition for immediate allowance. Nevertheless, if any undeveloped issues remain or if any issues require clarification, the Examiner is respectfully requested to call Applicants' attorney in order to resolve such issue promptly.

**Application No.:** 10/582,919  
**Filing Date:** April 12, 2007

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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